Transverse Disc Motor

Inventor:
Delbert L. Hartman
68 Juniper Hills
Edgewood, NM 87015
United States Citizen

BACKGROUND OF THE INVENTION

The transverse disc motor under consideration has been designed to incorporate the advantages of both piston and turbine type motors and to avoid their disadvantages.

Piston type motors having numerous moving parts which continuously stop and start, operate at relatively low temperatures, and thus do not fully utilize the fuel and are frictional, necessitating lubricants, which despite the very best seals and gaskets, leak from the motor into the environment and cannot be recovered. Despite these problems, the piston motor has one advantage, it can take relatively small amounts of fuel or pressure and, can convert it into a very directional force, whereas turbines rely on a bounce effect in which a great deal of energy is lost, or is counterproductive. However, because the turbine incorporates very few moving parts and those parts move in only one direction and are nearly frictionless, the turbine has replaced the piston in large power installations.

SUMMARY OF THE INVENTION

It is the object of this invention to replace both the aforementioned motors with one that as nearly as possible incorporates the directional force of the piston type and the continuous rotation, near frictionless, minimal moving parts of the turbine type. It is the premise of this invention that a rotating disc mounted on the appropriate bearings can withstand substantial side force without greatly affecting the amount of power required for its rotation.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a top section view of the transverse disc motor and partial housing

Fig. 2 is a sectional side view of the transverse disc motor and partial housings

Fig. 3 is a top elevation view of the housings minus the time and fly gear housing

Fig 4 is an elevation view of the transverse disc motor form the valve disc end

Fig. 5 is a top elevation view of the fly gear and timing gear and a part of their housing

Fig. 6 is an elevation view of the transverse disc motor from the valve disc end to show the possibility of the valve disc positioned at an angle to the power disc other than perpendicular or ninety degrees

Fig. 7 is an elevation view of the transverse disc motor housings to illustrate the possibility of multiple disc valves

Fig. 8 is an elevation view of the transverse disc motor to illustrate the possibility of multiple power discs, one running clockwise and the other running counter-clockwise

Fig. 9 is a sectional view illustrating the possibility of multiple power discs from another side of the motor, as well as the gear linkage between the two power discs

DETAILED DESCRIPTION OF THE INVENTION

Referring now specifically to the drawings, the numeral (1) refers to the transverse disc motor. The motor includes a valve disc (2) with its aperture (3), housing (4), seals (7) and (8), bearings (5) and (6), adjusters (9) and (10), a gearbox (11), a pair of corner gears (12) and (13), a pressure vent (14), and a timing gear (15).

The motor also includes a power disc (16) with its housing (17), its bearings (18) and (19), seals (20) and (21), adjusters (22) and (23), power cups (24), (25), and (26), pressure vents (27) and (28), intake port (29), exhaust port (30), and fly gear (31).

The timing gear (15) and the fly gear (31) have a housing (32), which is fastened to the valve disc housing (4) and the power disc (17).

The materials from which the valve disc motor (1) is constructed will depend on application, metals, ceramics, plastics, etc.

The power disc (16) and the valve disc (2) are timed together by the meshing of the fly gear (31) and the timing gear (15).

Timing gear (15) motion is transferred through the timing gear shaft (33), then through the corner gears (12) and (13), hence to the valve disc (2).

As the power disc (16) rotates ~~(as per the drawings counter-clockwise)~~ clockwise or counter-clockwise, one of the power cups (24), (25), or (26) approaches the valve disc (2). The valve disc (2) is so time with the power disc (16) that the aperture (3) is in the correct position to allow the power cup (24), (25), or (26) to pass through the perimeter of the valve disc (2). As the power disc (16) rotates further, so also does the valve disc (2),

moving the aperture (3) into the valve disc housing (4), closing it. Further rotation of the power disc (16) creates a void between the power disc cup (24), (25), or (26) and the valve disc (2). Liquid or gas may ~~then move or~~ be moved into the void. If the liquid or gas is under pressure, it will drive the motor (1). ~~If the liquid or gas is detonated, this also will drive the motor (1).~~ If the liquid or gas is not under pressure, the motor (1) must be driven. The void becomes a vacuum; a liquid or gas moves through the intake port (29) into the void and will be trapped between the power cups (24) and (25), (25) and (26), or (26 and (24) until the space between the power cups is again intersected by the valve disc (2). At which point, pressure will develop between the backside of the power cups (24), (25), or (26) and the valve disc (2), forcing the liquid or gas through the exhaust port (30). The exhaust process is the same whether the motor (1) is driving or being driven.

The discs (2) and (16) are machined within the closest tolerances possible to their housings (4) and (17). Clearance between the discs (2) and (16) and their housings (4) and (17) is maintained by the use of the tapered roller bearings (5), (6), (18), and (19) and their adjusters (9), (10), (22), and (23). Various condiments may be added depending on the application of the motor, but the configuration and purpose of the discs remains the same, though the discs (2) and (16) do not necessarily have to be at right angles to one another. The pressure vents (14), (27), and (28) allow for bypass gases or liquids to escape the motor, preventing them from passing by the seals (7), (8), (20), and (22) and contaminating the bearings (5), (6), (18), and (19) or their lubricants.

~~The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in~~

~~the art, it it not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.~~

The valve disc (2) does not have to be perpendicular to the power disc (16). The valve disc (2) being at an angle to the power disc (16) other than ninety degrees may be desirable in certain applications both for the purpose of mechanical efficiency as well as the outward configuration of the motor (1).

The transverse disc motor (1) may also have multiple valve discs, (2a) and (2b), etc., for the purpose of increasing the performance of the transverse disc motor (1). It should also be said here that any material passing through the transverse motor disc (1) should enter and exit so as to further facilitate the rotation of the valve discs (2a) and (2b), etc. The transverse disc motor (1) may also have multiple power discs (16) and (33), etc. running either clockwise, counter-clockwise, or both. One power disc (16) may rotate counter-clockwise and a second power disc (33) may rotate clockwise. In this configuration, the amount of material pressing against the surfaces of the valve disc (2) remains the same per the number of power discs (16), (33), etc. As the power disc (16) rotates counter-clockwise and one of its power cups (24), (25), or (26) approaches the valve disc (2), it is so timed as to pass through the valve disc (2) aperture (3), which is also rotating. The valve disc (2) continues to rotate the aperture (3), so that the pressure or vacuum chamber (38) of the power disc (16) is closed. The continuing rotation of the valve disc (2) then opens the pressure/vacuum chamber (39) of the power disc (33), allowing one of its power cups (36), (37), or (38) to pass through the aperture (30 of the valve disc (2). Both pressure/vacuum chambers are then actuated simultaneously by means of the intake ports (29) and (40) and whatever valve system may be desirable causing the pressure on the valve disc (2) bearings (5) and (6) to be reduced to zero.

Any number of valve discs (2a), (2b), etc. and power discs (16), (33), etc. rotating either clockwise or counter-clockwise could be used in the construction of the transverse disc motor (1).